

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of: Max P. McDaniel, Joseph S. Shveima, Elizabeth A. Benham and  
Rolf L. Geerts

For: **POLYMERIZATION CATALYST SYSTEMS AND PROCESSES USING  
ALKYL LITHIUM COMPOUNDS AS A COCATALYST**

**LETTER**

Assistant Commissioner of Patents and Trademarks  
Washington, D. C. 20231

Attached hereto for filing in the United States Patent and Trademark Office is the  
patent application identified above. This application includes an executed assignment and 0  
sheet(s) of drawings.

The filing fee has been computed as follows:

Basic Fee	\$760.00
Additional Fees:	
Total number of claims (whether independent or dependent) over 20, times \$18.00	\$162.00
Number of independent claims over 3, times \$78.00	\$78.00
Multiple Dependent Claims (\$260)	\$000.00
Total Filing Fee	\$1000.00

Please charge Deposit Account 16-1575 in the amount of the total filing fee stated  
above. The Commissioner is hereby authorized to charge any additional fees which may be  
required under 37 C.F.R. 1.16 or 37 C.F.R. 1.17, or credit any overpayment, to Deposit Account  
16-1575, but is not authorized to charge any fee provided for under 37 C.F.R. 1.18.

If the Examiner wishes to contact representatives of record concerning the  
accompanying application prior to the first Official Action, such contact should be made with the  
undersigned.

The following references, a copy of each is attached, are called to the Examiner's attention:

U.S. 3,879,368 (Johnson, April 22, 1975) - discloses polymerization catalyst treated with strong reducing agents and silane-treated polymerization catalysts and processes. The patent does not disclose or suggest olefin polymerization in the presence of a catalyst system comprising a chromium component supported on a silica-type support and a cocatalyst comprising an alkyl lithium compound. The patent also does not disclose or suggest novel olefin polymers having decreased high load melt index, decreased melt index and increased fluff bulk density.

U.S. 5,845,176 (Konrad et al., July 4, 1989) - does not disclose or suggest a reduction step during catalyst system preparation.

U.S. 4,180,481 (Schulze, Dec. 25, 1979) - does not disclose or suggest use of an alkyl lithium compound with a supported, oxidized and then reduced chromium catalyst system. Additionally, Schulze teaches the requirement of a promoter  $(\text{NH}_4)_2\text{SiF}_6$ , which is not disclosed or suggested by the present invention.

U.S. 4,383,939 (Johnstone, May 17, 1983) - discloses a Ziegler catalyst component that can be used to polymerize olefins. The '939 patent does not disclose or suggest using an alkyl lithium compound to produce a lower density polymer having an increased melt index or high load melt index.

The following items are also brought to the Examiner's attention:

U.S. 3,947,433 (Witt, March 30, 1976)

U.S. 4,735,931 (McDaniel et al., April 5, 1988)

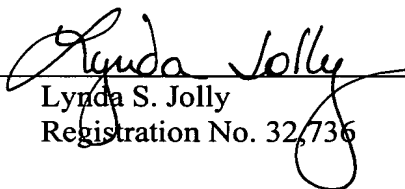
U.S. 4,514,514 (Martin, April 30, 1985)

U.S. 5,155,186 (Hogan et al., Oct. 13, 1992)

The present invention is a patentable movement over the above-listed four patents in the recitation of polymerization in the presence of a supported chromium catalyst system and a cocatalyst selected from the group consisting of alkyl lithium compounds and alkyl aluminum ethoxides and a second metal alkyl cocatalyst in order to produce a low density polymer having an increased high load melt index or an increased melt index.

Respectfully submitted,

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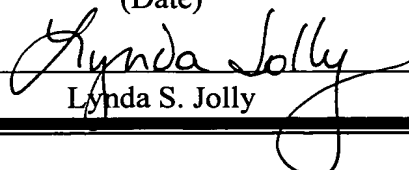
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I hereby certify that this fee letter is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 on the date indicated and is addressed to the Assistant Commissioner of Patents and Trademarks, Washington, D.C. 20231, on

NOV 5 1999

(Date)

  
Lynda S. Jolly

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Assistant Commissioner for Patents  
Washington, D. C. 20231

Sir:

I hereby certify that this application is being deposited with the United States  
Postal Service "Express Mail Post Office To Addressee" service under 37 C.F.R. 1.10 on the date  
indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C.  
20231.

Respectfully submitted,

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